MEMORANDUM

TO: Thomas D. Getz, Chief
Division of Air and Hazardous Materials

FROM: Stephen Majkut, Supervising Principal Engineer
Division of Air and Hazardous Materials

DATE: 21 September 1987

SUBJECT: Report on Sampling in the Area of Ciba Geigy

In July 1986 the Department instituted a program to examine the soils in the area of Ciba Geigy to determine if contamination as a result of air emissions was present. I will review the program and make a final recommendation.

Sampling of 23 July 1986

Seven sites near Ciba Geigy, including one background, were sampled. See memo of 24 October 1986 for a detailed analysis.

Generally, the results of the sampling showed low levels (less than 70 ppm) of VOCs were found in soil samples. The highest levels were found at the site nearest Ciba Geigy, although the compounds found in highest concentrations (chloroform and dichloromethane) were not known to be used at the plant.

Elevated levels of Polycyclic Aromatic Hydrocarbons (PAHs) were reported by the laboratory. Tinuvins and some other compounds associated with Ciba Geigy were also found.

BARBARA MORIN & TOXICOLOGIST

No adverse health effects could be expected at the level that any compounds were found. Only Site 6 (Roberts Circle) had levels approaching a level of concern. It was recommended to sample urban areas outside Geigy to see if VOC, PAH, and Tinuvin could be found.

Sampling of 12 November 1986

Sampling was conducted of three urban locations not near Ciba Geigy and one rural location. Two tomatoes grown near Geigy were analyzed. See memo of 5 December 1986.

The results showed that PAHs were found in the urban locations and in much lower quantities than in the rural locations. No VOCs or Tinuvins were found in any samples. Phthalate compounds were found in four locations and in one tomatoe.

The sampling confirmed that PAHs are found to be wide spread in the urban environment. Because no VOCs or Tinuvin were found outside the Geigy area, it was recommended to expand the sampling in the Geigy area to obtain further evidence on any contamination.

Sampling of 15 April 1987

Ten samples were taken in the area of Ciba Geigy including to the south and west of the facility. The results of the sampling showed no VOCs present (except for one finding of 0.7 ppm). Sampling showed Tinuvins present at two locations at low levels. Other compounds thought to be associated with the operations at Ciba Geigy were also tested and were found only in one location at a low level. Levels of Phthalates were found at all sites. Although not requested from the laboratory, levels of DDT and DDE were reported at one site each.

Again, this sampling found no level of any compound which would be of concern from a health point of view. NO PATTERN OF CONTAMINATION

Conclusions and Recommendations

Some level and often elevated levels of PAHs and Phthalates were found in virtually all the samples when these results were reported. PAHs are produced as a product of combustion of fossil fuels or are formed during degradation of organic matter in soil. Phthalates are thought to be widespread because of their use as a plasticizer. The presence of these classes of compounds cannot be attributed to a particular source.

The VOC results of the 23 July 1986 sampling gave an indication of Ciba Geigy as the source of VOC contamination because levels were higher nearer the facility. However, caution must be used when reviewing results near the minimum detection limit as these results were. Also, these results were not confirmed by the 15 April 1987 sampling showing the contamination is not widespread. The 23 July results for VOC must be considered an indication of the maximum amount of contamination. These levels were not considered to present a significant health risk.

The 23 July sampling showed levels of tinuvins at four of seven sites, including the background. The 12 November 1986 sampling of sites away from the Ciba Geigy showed no tinuvins, indicating Ciba Geigy as the source of tinuvins found in the earlier sampling. The 15 April results did not confirm the incidence of tinuvins in the soil near Ciba Geigy, indicating any tinuvin contamination is not widespread. Also, no levels of tinuvin found present a significant health risk.

It is the conclusion of this study that the sampling indicates there is no widespread contamination of soil by emissions from Ciba Geigy and any contamination present in the area surrounding Ciba Geigy doesn't present a significant health risk.

Concurrent with this investigation, EPA has been conducting a RCRA Facility Assessment (RFA) under authority of the Hazardous and Solid Waste Amendments to RCRA. It is recommended the Department review the RFA and any enforcement orders or permit actions resulting from the RFA. If these show a potential health threat that will not be addressed by an EPA order or permit then the Department should reopen this study and/or take any other appropriate action.

cc: Robert L. Bendick, Jr.
geigy-sm/CP:5


Cuntiff Lake
PARK
Edgewood
NORWOOD
Norwood Ave Sch
Hospital
Deep Spring Lake
Elm Lake
EDGEWOOD
St Matthews Sch
St Pauls Sch
Edward Rhodes Sch
Barrows Sch
BLUFF AVE
Fenner Pond
Playground
Park View Jr High Sch
Cem
Silver Hook
Fay Mem Field
PAWTUXET RESERVATION
Bellefont Pond
ELMWOOD
PROVIDENCE CO
KENT CO
Sanders Sch
Sub Sta
Cem
RIVER
ROAD
Pawtuxet
Lakewood
Christopher Rhodes
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23 JULY 1986

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

DIVISION OF AIR AND HAZARDOUS MATERIALS

RESULTS OF SOIL SAMPLING IN CRANSTON AND WARWICK

		Sample Number						
Metal (ppm)	MDL	1	2	3	4	5	6	7
Zinc	-	25.1	105.2	19.9	33.3	32.6	40.2	65.5
Volatile Organics (ppm)								
Chloroform	0.5	8	0.5	2	6	6	40	6
Bromodichloromethane	0.5	ND	ND	ND	ND	ND	1	ND
Dibromochloromethane	0.5	ND	ND	ND	ND	ND	ND	ND
Bromoform	0.5	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	0.5	ND	ND	ND	ND	ND	0.8	ND
Carbon Tetrachloride	0.5	ND	ND	ND	ND	ND	0.5	ND
Trichloroethylene	0.5	ND	ND	ND	ND	ND	ND	ND
1,1,2-trichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	0.5	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	0.5	ND	ND	ND	ND	ND	ND	ND
Dichloromethane	0.5	20	2	1	10	8	70	10
1,1-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethene	0.5	ND	ND	ND	ND	ND	0.8	ND
1,1-dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND
1,2-dichloropropane	0.5	ND	ND	ND	ND	ND	ND	ND
1,3-dichloropropene (cis & trans)	0.5	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND	ND	ND	ND	ND
Benzene	0.5	ND	ND	ND	ND	ND	0.7	ND
Toluene	0.5	0.6	ND	ND	0.6	0.7	2	0.9
Ethylbenzene	0.5	ND	ND	ND	ND	ND	0.5	ND
Xylene	1.0	ND	ND	ND	0.9	1	3	2
2-chloroethylvinylether	0.5	ND	ND	ND	ND	ND	ND	ND
Polycyclic Aromatic Hydrocarbon Extractables (ppb)								
Naphthalene	10	ND	ND	18	91	ND	ND	34
Acenaphthylene	15	ND	92	57	680	43	23	250
Acenaphthene	15	ND	180	51	ND	ND	ND	ND
Fluorene	15	ND	330	110	690	ND	ND	33
Phenanthrene	10	66	4500	2000	5800	240	250	350
Anthracene	10	ND	550	130	4900	ND	ND	56
Fluoranthene	15	190	6700	2300	14000	490	460	690
Pyrene	15	140	4700	1400	12000	370	360	550

Polycyclic Aromatic Hydrocarbon Extractables (ppb) (continued)

	MDL	1	2	3	4	5	6	7
Benzo(a)anthracene	15	74	1800	520	3100	220	180	400
Chrysene	15	53	2300	3700	6300	140	120	330
Benzo(b)fluoranthene	20	ND	1800	560	4200	180	ND	580
Benzo(k)fluoranthene	20	ND	3200	470	2700	180	250	350
Benzo(a)pyrene	25	ND	3600	550	4000	230	ND	680
Ideno(1,2,3)pyrene	50	ND	ND	600	1500	ND	ND	ND
Dibenzo(a,h)anthracene	50	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	50	ND	ND	440	1300	ND	ND	ND
Dacthal *	150	910	ND	ND	ND	ND	ND	ND

Others (ppb)

p-cresol	150	ND	ND	ND	ND	ND	ND	ND
phenyl ether	50	ND	ND	ND	ND	ND	ND	ND
biphenyl	25	ND	ND	48	950	ND	34	ND
Tinuvin 327	50	ND	11000	ND	ND	ND	2100	110
Tinuvin 328	50	110	1500	ND	ND	ND	420	36
Prometon	150	ND	ND	ND	ND	ND	ND	ND

* Not a polycyclic aromatic hydrocarbon.
ND Not detected at concentrations above the Minimum Detection Limit (MDL).
MDL Minimum Detection Limit; the level below which the chemical cannot be detected with presently available instrumentation.
PPM Parts per million.
PPB Parts per billion.

Samples collected 23 July 1986.

Analyses performed by the Rhode Island Department of Health, Division of Laboratories